

The Environmentally Sensitive Area legislation in the United Kingdom and its potential application to the Picos de Europa mountains in north-west Spain

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Summary

The Picos de Europa are representative of the diverse cultural landscapes of Spain that are currently threatened by changes in traditional management practices. They contain the first national park to be declared in Europe, and, although this has recently been extended, there is no policy to support the traditional agricultural practices that maintain the landscape. The Environmentally Sensitive Area (ESA) scheme in Britain is described in order to provide an appropriate policy background within which the ecological characteristics of the region could be maintained. The general background to the environment of the region is then described, with its unique interactions amongst limestone rock, climate, species and anthropogenic influences that have produced a complex cultural landscape. A statistical classification of the region was constructed which, in conjunction with a field survey, enabled the ecological resources to be assessed, and also identified the principal threats to the character of the region. It is suggested that ESA-style legislation could provide a valuable policy instrument to encourage maintenance of the cultural landscape and some appropriate prescriptions are proposed for this purpose.

Keywords: cultural landscape, agricultural practice, meadows, resource assessment, Environmentally Sensitive Area

Introduction

Cultural landscapes, i.e. those in which the component ecosystems have developed over many centuries in response to anthropogenic management, are now widely recognized as of major conservation importance (Birks *et al.* 1988; Bergland 1991; Selman 1994). Many such landscapes are threatened by changes in factors such as agricultural practice, afforestation and tourist pressure. The World Conservation Union (IUCN) has recognized such threats by setting up a working group to examine approaches to producing a 'red data book' for such landscapes. Policies and measures are also required for maintenance; one appropriate measure is designation as

an Environmentally Sensitive Area (ESA). Apart from the general environmental background to such landscapes, there is a prerequisite for a clear definition of the resources of the region concerned. The present paper therefore describes the environmental characteristics of a representative Spanish region, the Picos de Europa in north-west Spain, before describing a statistical procedure for assessing the characteristics of the resources of such regions. This assessment is used as a basis for suggesting how the ESA designation could be applied to the maintenance of agricultural practices which maintain the biodiversity in the region concerned.

The Picos de Europa and Environmentally Sensitive Areas in the United Kingdom

The Picos de Europa have the distinction of having been the first national park in Europe. The original national park, Covadonga (Duffey 1982), is in the western massif and was designated in 1918, although extended in 1995 into the central and eastern massifs. Covadonga is in fact one of the less wild parts of the Picos and was arguably designated as much for its historical significance as for its landscape or nature conservation, in that it was the site of an early crucial battle against Moorish invaders. In May 1995, the other two massifs were given national park status. Previously no hay meadows had been included, but now, below Sota Sajambre and near Sotres, land which is more intensively managed has been included. Spanish national parks formerly had a policy of non-intervention, but this is no longer tenable. Although there is grazing in the Covadonga Lakes area as well as some cutting of bracken and grass, there has been no new policy developed for agriculturally-managed land, and currently, the central issue of support for the farming communities has not therefore been addressed. Many landscape elements require traditional management practices and the present paper is designed to inaugurate further debate on a procedure by which appropriate support could be provided within the current European Union (EU) legislation.

The maintenance of landscape features is often closely linked to the management of ecosystems for wildlife conservation. In some situations, however, landscape features require separate consideration. For example, the traditional farm buildings of the region, with their red roofs and distinctive architectural style, are an important visual feature of the landscape, but are not ecologically significant. Similarly, the

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traditionally-managed hand-pruned trees have no obvious ecological importance except as bird perches, but add to the attractiveness of this cultural landscape. Both these features require a viable farming community to provide the financial backing for people to remain in the landscape and carry out such traditional maintenance.

In the 1980s, the United Kingdom (UK) government perceived a requirement to develop a policy tool for maintaining traditional farming practice within regions known to have a high level of biodiversity (Ministry of Agriculture, Fisheries and Food 1989). The ESA scheme was launched experimentally in 1989, in order to provide payments to farmers to conserve specific elements in the landscape which are considered to be of value in the context of the region concerned and, in the context described above, to maintain cultural landscapes. The key principles are:

- a voluntary approach, with farmers free to opt in at their discretion;
- no overt penalties on their choosing not to participate;
- active promotion of the scheme by government officers experienced and conversant in practical farming matters;
- an advisory role for conservation agencies, with a programme of scientific monitoring;
- contracts in clear terms over a maximum period of time;
- a tiered approach with different levels of payments. Lower tiers require no more than the continuation of current practice; upper tiers tend to require a reconstruction of damaged elements;
- emphasis on the identification of elements important in the specific regional context concerned; and
- attention to value for money.

Table 1 compares the area under agreement in ESAs and other schemes and shows the comparatively large take-up. In 1996, £37 million was paid for ESA agreements and Clarke

Table 1 Agri-environment schemes in England and Wales (as at June 1996) as given by Clarke (1996) – = not available.

	Agreement area (ha)	No. of agreements
<i>England</i>		
Environmentally Sensitive Areas	426 683	7792
Countryside Stewardship	92 585	5284
Countryside Access Scheme	993	77
Habitat Scheme	5100	293
Moorland Scheme	–	15
Nitrate Sensitive Areas	19 611	359
Organic Aid Scheme	4673	101
<i>Wales</i>		
Environmentally Sensitive Areas	113 543	1393
Countryside Access Scheme	–	–
Habitat Scheme	725	67
Moorland Scheme	–	5
Tir Cymen	61 057	556
Organic Aid Scheme	420	9



Figure 1 Location of the Picos de Europa mountains in the Iberian peninsula.

(1996) emphasizes that such payments can make a difference in the viability of a farm. The other schemes vary from supporting access to providing specific payments for the enhancement of upland vegetation, such as heather moor. These other schemes are less pertinent to the Picos, whilst the ESA scheme has the ability to be a model and to be adapted to the conditions appertaining in the region. It is especially pertinent as it is well suited to maintaining traditional management practices within such a highly-developed cultural landscape. Our experience in the Picos suggests that many farmers value the local tradition of farming and would therefore welcome such support.

Environment of the Picos de Europa

The Picos de Europa are a region of some 600 km² of jagged carboniferous limestone mountains reaching 2500 m and situated in north-west Spain to the south-west of Santander (Fig. 1). The western side of the massif is exposed to Atlantic weather systems and is strongly oceanic. The protected south-eastern valleys are influenced more by the sub-Mediterranean character of the central Spanish plateau, which is accentuated on south facing slopes.

The combination of high rainfall and limestone rock has led to the creation of many karstic landforms in the landscape, as described by Sweeting (1972), although many have local names. The Picos appear geomorphologically similar to other mountain limestone areas in Europe such as the Dolomites and Maritime Alps. Although the climate regime is distinct in a European context, it is most similar to the central Pyrenees, and the Julian Alps of Yugoslavia, as defined

by the European environmental classification of Bunce *et al.* (1996). These areas are, however, more extensive than the Picos de Europa, and less isolated geographically. The overall background to the status of the landscape is provided by Gomez-Sal (1994) and details of the farming systems by Garcia Fernandez (1975) and Otero Diaz (1977). The flora has been well described in the Spanish literature by Rivas-Martinez *et al.* (1984), but only limited descriptions of the ecology are available in English, notably by Farino (1987, 1988) and by Goldsmith and Garcia (1983). These descriptions emphasize the particular botanical significance of the hay meadows, and also the overall diversity of the region, arising from the combination of climate and limestone soils. The climate is a complex mixture of Atlantic, Alpine and Mediterranean influences which is dependent upon altitude, aspect and exposure to the west. Because of its geographical isolation and position in the Iberian peninsula, there is a complex mixture of phytogeographical elements, including those of the Euro-Siberian, Lusitanian and Mediterranean. Further diversity is present due to outcrops of acidic sandstones and conglomerates, which favour different species.

Although the region has a long history of human settlement, agriculture probably started in Roman times, as in much of the Mediterranean region (Thirgood 1981; Naveh 1982), and the current appearance of the cultural landscape is therefore the product of many centuries of interaction between humankind and the environment (Gomez-Sal 1994). The landscapes are comparable to other mountain-pasture systems, as described by Curtis and Bignall (1991), and the composition of the vegetation reflects their southern location. There are more traditional practices still in place, especially in tree management, than in many other European mountain regions (R.G.H. Bunce, personal observation). However, until recently, the Picos de Europa have not been exploited for tourism in the same way as the Alps and do not have such a history of visitor pressure, because of the isolation of the region from the main European cities. Over the last 10 years, however, with the extension of tourism to this previously remote area, the situation is gradually changing.

Historically, the main agricultural activity has comprised different types of livestock enterprises, principally those of cattle but also of sheep and goats, although until thirty years ago according to local sources of information, there were more crops than today. Agriculture therefore depended mainly upon grass utilization through grazing on the one hand and by means of hay production on the other. On most farms, the animals were kept indoors on the lower slopes in winter and were shifted to the mountain pastures (the practice of transhumance) in the summer (Gomez-Sal 1994). Until recently, people moved up to live with the animals through the summer, to carry out the herding and shepherding of the stock. This intensive application of human labour extended to the cutting of grass on precipitous fields, the trimming back and burning of scrub, and tree management for fodder. The comparatively large population was mostly self-sufficient, and crops such as maize, wheat and chick peas

were grown to supplement the animal production. Traditional breeds of cattle, sheep and goats were used which were adapted to the difficult terrain and helped contain scrub invasion. The woodlands were used communally for timber and firewood, with young twigs being used for fodder and leaves for bedding to supplement grass production. In addition, trees, especially ash, poplar and elm, were managed along fields and field edges for fodder by lopping and topping, and were planted in the uplands around better grazing areas known locally as *majadas*. The valleys were therefore integrated in a complex interrelated system of components which were ultimately dependent upon human labour.

Comparable systems were widespread in other mountain areas in Europe, for example western Norway (Austad & Skogen 1990), where tree exploitation was also integrated with traditional farming practice. The species-rich hay meadows with their diverse fauna and flora were a by-product of these traditional management systems, providing fodder for overwintering livestock. The modern shift towards grass which is more intensively managed, increases the productivity, but the diversity declines, as Losvik (1993) and Smith (1994) have shown. The vegetation character shifts towards scrub if there is a decline in management.

Progressively, since the introduction of modern farming methods and the move away from self-sufficiency to farming for profit, these traditional systems have been changing. Whilst in Norway they have all but disappeared, the meadows of the Picos de Europa have still maintained a high proportion of traditionally-managed grasslands. Superficially the valleys appear in a stable situation, since the landscape is still apparently well maintained. However, as elsewhere in Spain (Regato Pajares *et al.* 1996), there has been a gradual abandonment of the steeper and most difficult slopes to scrub, and local farmers suggest that this trend is likely to continue (R.G.H. Bunce, unpublished data 1996). Such changes were given added impetus when Spain joined the EU, as the latter provided a source of financial support for new access roads and parallel support for agricultural improvements. As a result, there has been a pronounced move away from self-sufficiency towards the purchasing of basic human foodstuffs, which in turn has led to a decline in crop diversity. There has also been a shift away from the traditional cattle breeds towards the high-performance Charolais and Limousin breeds (for beef) plus mainly Swiss and Friesian cows for milk. This shift has ecological implications, as, firstly, these cattle are heavier and cannot graze the steeper slopes, and, secondly, according to local farmers they do not eat the rougher herbage or bushes. Thus, they do not control scrub encroachment. Similarly, they are ill-adapted to the poor mountain pastures, and are therefore rarely taken up to the higher levels. Such livestock tend, therefore, to require either supplementary feed or greater grass production from the more improvable meadows and pastures, and this is often through silage production. Over recent years, there has also been a decline in the farming population, according to local people, so that the steeper fields are

progressively becoming overgrown for want of management by either cutting or burning. Some are let (to use an English law term in a broad sense) by their owners; letting reduces the impact of the declining population but, together with fertilizer use, also leads to decline in floristic diversity. There is also a trend towards decreasing use of well-rotted manure because of the labour required to spread it, compared to the ease of slurry spreading by tractor on accessible fields. In addition, fields which were formerly managed by shepherding (a verb used throughout this article to include goats and cows) are now being fenced (R.G.H. Bunce, unpublished data 1996). Discussions with local people and our own personal observations suggest that many farmers are in the older age categories.

Many of the meadows in the valley bottom have already been converted into productive grasslands with few species, and a survey organized by R.G.H. Bunce has shown that in one of the major valleys, the herb-rich traditional hay meadows currently constitute only c. 8% of the landscape, although there is still much floristic diversity elsewhere. The trends described above indicate that the resource is likely to be under increasing pressure from abandonment, which will lead to scrub and eventually woodland or to intensification leading to grass monocultures. Landscape features, such as the 'candalabra' trees (those that are hard pruned for fodder every 5–10 years) may also be lost if management ceases. These are trees usually along field margins which are selectively pruned to produce alternating stubby branches from the ends of which fresh shoots can be cut by a climber with a machete. These provide valuable late summer/autumn fodder mainly for cattle. It is therefore necessary to examine a support mechanism appropriate for the maintenance of traditional forms of farm management, with recent changes in policy option for conservation in grassland management as indicated by Baldock (1994a, b). He suggested additional environmental incentive payments, the greater use of cross compliance, increased support for extensive pastoral systems and reform of policies for the less favoured areas, and the introduction of special aids for shepherding.

Methods

An area 20 km × 33 km, encompassing the three main mountain massifs of the Picos de Europa, was delimited for study. This area extends from Arenas de Cabrales in the north-west to Potes in the south-east (Fig. 2), and includes the river valleys of the Sella, Cares and Deva. The procedure developed by Bunce (1984) was used to provide environmental strata, from which samples could be drawn for field survey, to assess the ecological resources of the region. Environmental data were recorded manually for each 1 km² from topographic, geological and climatic maps and features such as altitude bands, lakes and cliffs noted. Variables were converted into attributes, as described by Bunce *et al.* (1996). The computer classification technique TWINSPAN (Hill 1979) was then used to a level of three divisions giving eight classes, which

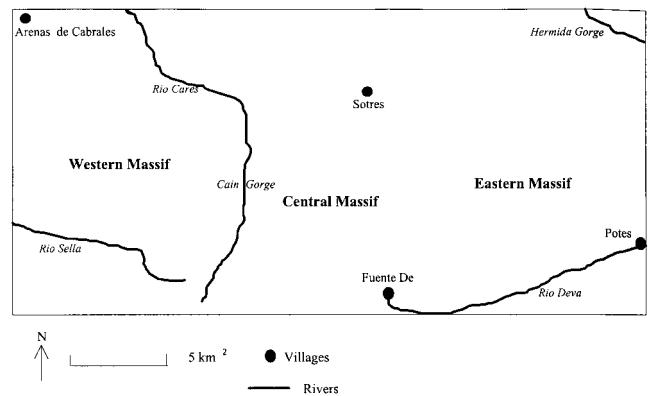


Figure 2 Distribution of the three mountain massifs and river valleys within the Picos de Europa mountains and extent of the study area.

reflected natural divisions within the environmental series from high mountains into valleys. A field survey was carried out in 1990 of a sample of 65 1-km² grid squares drawn at random from each of the eight classes. Each 1 km² grid square was mapped using a series of standard land-cover categories, the area of which was then measured. These data were then used to define the characteristics of the strata as described by Bunce (1984). These categories were used as the basis for a zonation where the eight original classes were reduced to three zones according to their ecological affinities, as defined by combinations of land covers.

Results

Classes one and two correspond with the valleys of Figure 2, whereas at the other extreme classes seven and eight form the highland centre of the mountain massifs (Fig. 3). Examination of the distribution of the seven land-cover categories in the eight classes showed that the latter could conveniently be grouped into three zones (Fig. 4) and this classification represented a useful summary of their ecological affinities. These zones are described below, together with the potential changes that might take place.

Zone 1: high mountain

Zone 1 occupies 33% of the Picos and is composed of high mountain vegetation (Fig. 5), which is lightly grazed by rebbecos (Pyrenean chamois, *Rupicapra pyrenaica*) and goats. Otherwise the land cover is mainly rock and contains many of the distinctive karstic features of the Picos. Species which require isolation, such as the wallcreeper (*Tichodroma muraria*), live in this zone as well as many species with alpine and sub-alpine affinities.

In the past, the area has been protected by its isolation, but recent technological developments and improved communications have made it more accessible, and there may well be a decline in grazing pressure in the *vegas* (high mountain pastures). Limited losses of land may be expected from building

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Figure 3 Distribution of the eight environmental classes, determined by TWINSpan analysis of data recorded from 660 1 km², within the study area (Fig. 2) of the Picos de Europa mountains. The field survey 1 km² are shaded.

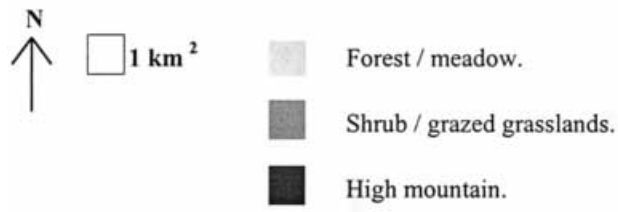
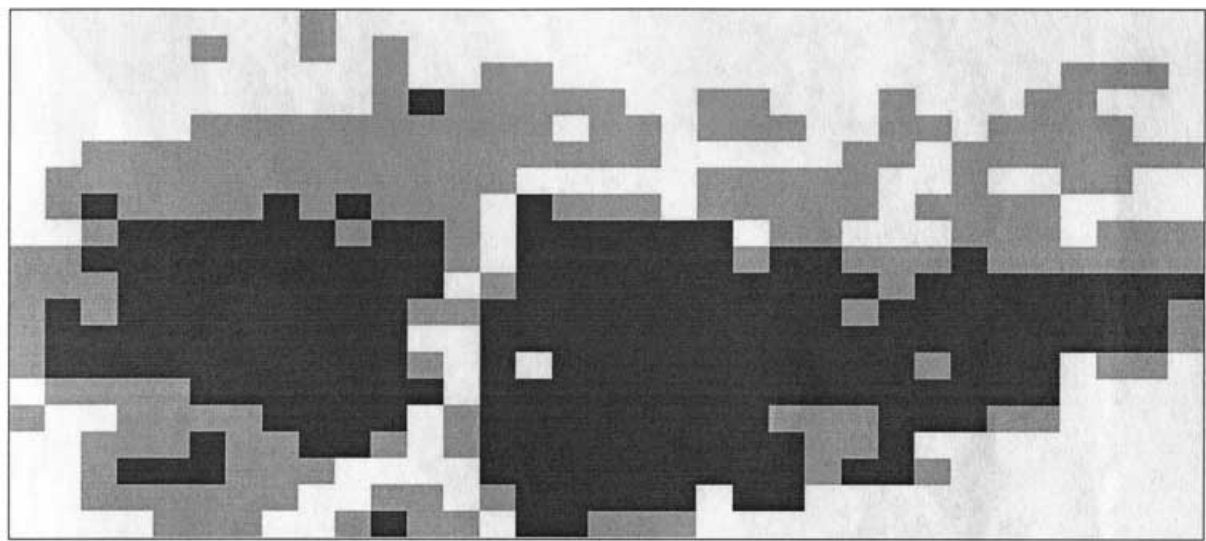


Figure 4 Distribution of the three zones (high mountain, scrub/grazed grasslands and forest/meadow), determined by grouping the eight classes of Figure 3 into ecological units, within the study area.

development, but new roads may cause local problems although the new national park status may control such development. On the other hand, the fauna, particularly the wallcreeper but also birds of prey, may well be disturbed by an increase in numbers of visitors.

There is likely to be an increase in recreational pressure,

which will affect the wilderness character of the Picos. Some planned developments, such as *télépheriques* (cableways) and new tracks, will have a major visual impact rather than having a direct ecological effect, but the new park designation should help control these. There is also recent evidence of the erosive power of the high rainfall on the banks of new tracks

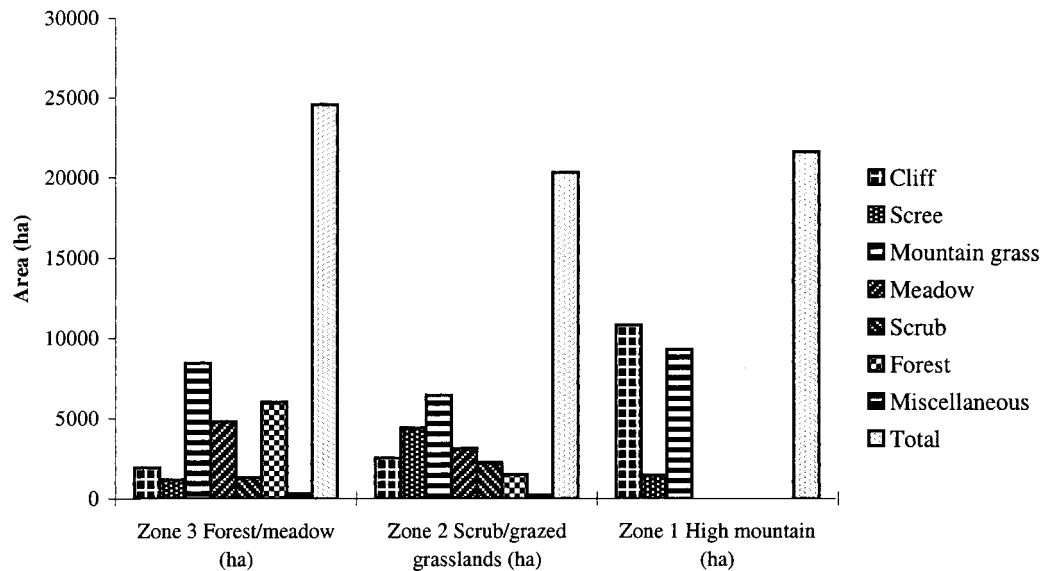


Figure 5 Area covered by the seven land-cover categories in the three zones, determined by field survey within the sample squares of Figure 3.

affecting water courses and destroying grasslands. Significant losses of footpaths and byways are already occurring because of the decline in their use by shepherds. Both of the last influences also occur in the next zone.

Zone 2: scrub/grazed grasslands

Zone 2 contains the scrub and grazed mountain grasslands and some of the highest meadows (up to 1400 m) of the high valleys and mountain sides (Fig. 5). Screens and cliffs are locally important and form refuges for alpine and calcicolous species, as well as for nesting birds. Agricultural management is of critical importance, as much of this zone was originally tree covered and patches of shrub can rapidly expand without grazing. The mosaics of small meadows, and lines of shrubs and trees, are characteristic, but there are also extensive heathland and forests (Fig. 5).

The traditional delicate balance between people, grazing animals, and the vegetation, means that the ecology of the hay meadows is very sensitive to any changes in management. The main impact in this area is likely to be that of the changing agricultural use referred to above. This balance therefore requires the maintenance of traditional practices if the diverse ecological and landscape patterns are to be preserved; the restricted flora of the meadows further emphasizes their fragility. Other habitats, including forest and heathland, are more robust.

The enjoyment of the flowering meadows extends to the general public, so the changes referred to above will not only affect ecologists but also visitors. The recent increased publicity for environmentally-oriented tourism in Spain should add to the value of these meadows. In the short term, the extension of scrub is unlikely to be noticed by many people, but it will have a major accumulated impact. The increasing

scrub and forest cover protects the land from erosion, but may also enhance water evaporation, reducing run-off and leading to problems with irrigation in the lower valleys.

Zone 3: forest/meadow

Zone 3 occupies 36% of the region, and contains a mosaic of forest and managed grasslands (Fig. 5) depending upon topography and aspect. It comprises the main valleys of the region and a large area on the northern fringe (Fig. 4). The east/southern fringe has a higher proportion of forest than the rest of the region due partly to its different geology and warmer climate. There is much variation in the vegetation because of geomorphological differences between valleys.

The forests have been traditionally managed for timber and firewood. Chestnut groves were also planted and managed for the nuts as well as for timber. Wood pastures were managed for acorns from various species of oak (*Quercus* spp.) and some cork oaks (*Quercus suber*) planted for their bark. More recently, Monterey pine (*Pinus radiata*) has been planted but this is mainly confined to small plantations. Modern forestry is centred on the lowlands, but traditional forest industries are in decline and much of the forest is unmanaged. The meadows are intensively managed for the most part, with few of the herb-rich hay meadows present, especially in the valley bottoms, although some steep fields have been abandoned and are turning into scrub. The woods can absorb recreational pressure well, but careful planning is required as certain of the more isolated forests contain susceptible species such as bear (*Ursus arctos*) and capercaillie (*Tetrao urogallus*).

New roads frequently cause erosion, with bankings washing out due to bad design (e.g. above Cameleño), and they have increased the sediment load in the rivers. The use of valley-bottom land for building can also be seen to be having an

important impact locally, both in terms of a loss of good agricultural land and visual impact. Most of the main roads are in this zone, so tourism is concentrated here.

Discussion

In a European Union context, ESA is applied to geographical units which are identified as having special characteristics worthy of conservation, and require positive policy support through voluntary schemes into which farmers and landowners can opt as described above.

The scheme was initiated in the 1970s with a shift of attitude away from the general belief that protecting agriculture by itself largely guaranteed what was valued in the countryside. The ESA, as a specific type of management agreement, grew out of practical experience of countryside initiatives especially on Exmoor and the Halvergate Marshes in England, and was described initially by the Ministry of Agriculture, Fisheries and Food (1989).

Our description of the Picos region provides a strong indication of the significance of its agricultural landscape and the threats involved. Quantitative data would be required to provide a basis for comparison with other sites, such as the limestone landscapes around the Cirque de Gavarnie in the French Pyrenees. The dependence of the constituent ecosystems on management, and their susceptibility to change, mean that, using normal criteria, the whole of the Picos de Europa region must be regarded as sensitive. As described in the introduction, the region therefore fits the criteria set down in the ESA legislation developed for the UK.

Given the special importance of the floral meadows of the Picos de Europa, it is notable that one of the early UK schemes involved the maintenance of traditional management regions in the hay meadows of the Pennine Dales. After some initial teething problems, largely concerning the prescribed date for the earliest cutting of hay, the experiment has been largely successful. ESAs in the UK have since been expanded in number and subtlety of the conservation options involved. Some 28 ESAs exist, covering around 12% of England, 15% of Scotland, 24% of Wales and 11% of Northern Ireland, and they are $c. 2.93 \times 10^6$ ha in area. The experience of the UK, and comparable efforts on Dutch wetlands, in French regional parks and elsewhere, led the European Economic Community (as it then was) to incorporate provision for national schemes into regulation 797/85 under Article 19 as described by the Ministry of Agriculture, Fisheries & Food (1989).

EU support for the ESA legislation is important for at least three reasons:

- the encouragement of voluntary support and the inclusion of farmers, with all their special local understandings of their land to be involved in management-based rather than restraint-led policies;
- EU money is available partially to reimburse national or regional expenditure; and

- the approach is a particularly beneficial form of voluntary production restraint by specific farmers, regions and nations. It should be recognized as part of the contribution to overall output reductions.

Spain contains a range of interesting and important habitats, such as the marshland of the Cota Donaña, for example, which is of international significance (Duffey 1982) but has protection comparable to a British nature reserve. However, discussion in the EU concerning the application of ESA approaches focused on the *dehesas*, which are dry grasslands with scattered evergreen (*Quercus ilex*) and cork oaks (*Quercus suber*) in western Spain and Portugal, and the steppe grasslands of central Spain. So far these schemes have not been extended to north-west Spain.

The traditional management regimes in the *dehesas* involving range grazing of cattle, the utilization of acorns by pigs, and scattered arable and fallow, have resulted in rich cultural landscapes of major significance as European footholds for a range of bird species, such as the black vulture (*Aegypius monachus*) and the great bustard (*Otis tarda*).

The Picos de Europa have not yet achieved this kind of international recognition, but the diversity of their cultural landscapes suggest that it would be appropriate for them to be recognized in policy at a European level.

In addition, the experience of R.G.H. Bunce and M. Bell over the last few years in the Picos, which included large numbers of lengthy conversations with a range of farmers, and the local experience of T. Farino, suggest, that the following points are relevant to the farming population:

- considerable numbers of older, less educated and/or more traditional farmers feel excluded from support;
- comparatively few people can be bothered to go through the lengthy bureaucratic process of claiming;
- it is felt that such support goes disproportionately to the larger, more 'progressive' farmers who have parcels of land capable of being agriculturally improved, fenced or irrigated;
- help has been primarily for agriculture 'improvement' and required personal capital to be risked; and,
- in virtually every case, the agricultural improvement encouraged is destructive of conservation value. Ecological change (loss of floral interest, and that of associated fauna) tends to exceed and precede such landscape harm as that entailed by loss of small field patterns, barbed wire fencing, and abandonment of *majadas*, which are the transhumance shelters typical of the higher land.

In parallel with agricultural support, EU Regional Fund investments have also assisted all the autonomous regions which meet in the Picos de Europa (Cantabria, Asturias and Leon). These funds have been to upgrade roads, open villages inaccessible to vehicular traffic, and bring electricity and other elements of rural infrastructure.

There is, however, no place for policies of enforced

Table 2 Description of suggested policy options for potential ESA designation in the Picos de Europa.

Tier	Core	Options
One	Grassland to be cut for direct feeding or hay-making as often as appropriate. No artificial fertilizer or pesticide. Rotted farmyard manure to be spread within an upper weight per unit area limit. Grazing of aftermaths (grazing following a hay cut) within headage limits. 'Cleaning' of scrub encroachment into meadows (by burning or cutting)	Management by lop and top of 'candalabra' ash trees or others. Basic upkeep of traditional wood/clay tile barns. Lower payment option for grazing only on former meadow land with no fertilizer or sprays but control of encroachment, although this would be unlikely to be necessary if local breeds were used. Use of traditional breeds only (sheep, goats, cattle and horses).
Two	<i>Meadows and woodland/montane grazing</i> As for tier one on meadows. Browsing and grazing of woodland/montane scrub but with regard to specified forest regeneration areas by agreed numbers of sheep, goats or cattle. Limits for the type of stock and the timing of grazing and hay cutting. Where appropriate the traditional summer stocking of high mountain pastures should be maintained. Expansion of bracken needs to be controlled, currently carried out mainly by village locals.	As for tier one. Additional shepherding payment. Maintenance/restoration of hill shelters, cheese caves, water troughs and other aids to transhumance.
Three	'Village plans' taking account of meadows, stocking, use of montane/woodland grazings and particular floristic or faunal advantages of the land around the village (rare species, especially important habitat mosaics, transhumance systems, for example). This then would allow the fragmented ownership pattern to be maintained without consolidation. Many decisions are taken at the village level and the work in meadows has shown the importance of accessibility.	

poverty, nor should there be a holding back from some members of the community the benefits that are available to most. Even if it were morally arguable, the evidence of depopulation and visible abandonment of some land shows the current support mechanisms to be inadequate.

There does, however, seem to be a way forward, which, with the careful presentation by sympathetic, agriculturally-experienced staff which has been important in ESAs, could complement the national park. Interestingly, the park designation in Spain increases headage payments (a subsidy for livestock) under the Less Favoured Area by 50% for those who can claim them and manage the paperwork. This uplift is useful politically for selling the idea, but in a harder logic may mean park designation increases payments which could harm conservation interest.

There are certain parallel non-productionist schemes already in existence, such as compensation for sheep and goats lost to wolves (*Lupus lupus*), or assistance to keep traditional breeds, which set the scene for an ESA-type approach. With boldness, and acknowledging the detailed work which would need to be done locally, the scheme outlined could provide a basis for discussion and eventually lead to a new policy initiative. The suggested policy options are summarized in Table 2. It is concluded that such an initiative could maintain the complex cultural landscape as well as the support for the local community.

The core concept is of voluntary entry to a scheme gently promoted by project officers who would need to be prepared to undertake paperwork on behalf of farmers. A three-tier

scheme is proposed, which should involve no minimum area. It may not be possible for people to enter all their holding into the scheme.

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